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EXAMINER

GREENE, DANIEL LAWSON

ART UNIT PAPER NUMBER

3663

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/662,079

Applicant(s)

LEVI, YIGAL

Examiner

Daniel L. Greene Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-9 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/25/04, 9/12/03, & 5/25/05 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Drawings

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because:

- a. of the reasons set forth in section 2 of the previous office action mailed 1/19/2005. Figure 3, received 2/25/2005 is still void of any useful content. It is understandable that applicant desires to keep figure 3 in the application however the process of converting photographs to scanned material has rendered any discernable information unascertainable. If applicant still prefers to keep Figure 3 in the specification then applicant must submit actual photographic copies of the actual photograph itself in accordance with current practices.

Additionally, color photographs and color drawings are not accepted unless a petition filed under 37 CFR 1.84(a)(2) is granted. Any such petition must be accompanied by the appropriate fee set forth in 37 CFR 1.17(h), three sets of color drawings or color photographs, as appropriate, and, unless already present, an amendment to include the following language as the first paragraph of the brief description of the drawings section of the specification:

The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the Office upon request and payment of the necessary fee.

Color photographs will be accepted if the conditions for accepting color drawings and black and white photographs have been satisfied. See 37 CFR 1.84(b)(2).

Finally, Figure 3 must also include the annotation of Figure 3A and Figure 3B, for example, as shown in the replacement Fig. 3 drawing received 2/25/2004.

- b. of the reasons listed on the attached PTO-948. Applicant is advised to comply FULLY with ALL items listed on the instant PTO-948.
2. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

Replacement Drawing Sheets

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

Annotated Drawing Sheets

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A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may **NOT** be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

Specification

3. The disclosure is objected to the same reasons set forth in section 4B and 4C of the previous office action mailed 01/19/2005.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first and second paragraphs of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

5. **Claims 1-4, 6-9 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.** The claim(s) contains subject matter, which was not described in the specification in such a way as to

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reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant's 5/25/2005 amendment to claim 1 introduced the limitation "...said close to spherical cavity causing a blasting impact from the detonation of the primary explosive charge to be directed essentially evenly to all spatial directions radially outwardly from the center of said cavity, thereby pulverizing the rock mass surrounding the onion, and disintegrating rocks at the surface area above said onion." (Underlining added) This is considered new matter in that according to applicants specification, page 5 subsection c) it would appear that it is the secondary charge that adds additional blasting impact to the surface area of the blasted site for ensuring that rocks at the surface area essentially above the onions are disintegrated into small pieces. Page 14 second paragraph states that "...the energy generated after detonating each primary explosive charge, is utilized to its full extent for pulverizing rocks/soil surrounding the primary explosive charges" Therefore it is not seen wherein the specification discloses that the primary explosive is used for disintegrating rocks at the surface area above said onion.

6. **Claims 1-4, 6-9 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.** The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant's 5/25/2005 amendment to claim 1 introduced the limitation "...said close to spherical cavity causing a blasting impact from the detonation of the primary explosive charge to be directed essentially evenly to all spatial directions radially outwardly from the center of said cavity, thereby pulverizing the rock mass surrounding the onion, and disintegrating rocks at the surface area above said onion." There is no adequate description nor enabling disclosure of what all is meant by and encompassed by the phrase "...said close to spherical cavity causing a blasting impact from the detonation of the primary explosive charge to be directed essentially evenly to all spatial directions radially outwardly from the center of said cavity, thereby pulverizing the rock mass surrounding the onion, and disintegrating rocks at the surface area above said onion." See the discussion of this issue in section 5 above.

7. Claims 1-4, 6-9 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Applicant's 5/25/2005 amendment to claim 1 introduced the limitation "...said close to spherical cavity causing a blasting impact from the detonation of the primary explosive charge to be directed essentially evenly to all spatial directions radially outwardly from the center of said cavity, thereby pulverizing the rock mass surrounding the onion, and disintegrating rocks at the surface area above said onion." The claim is vague indefinite and incomplete as to what all is meant and encompassed by the phrase "...said close to spherical cavity causing

a blasting impact from the detonation of the primary explosive charge to be directed essentially evenly to all spatial directions radially outwardly from the center of said cavity, thereby pulverizing the rock mass surrounding the onion, and disintegrating rocks at the surface area above said onion.” See the discussion of this issue in section 5 above.

b. There is no proper antecedent basis for all terms present. See for example “it” in claim 1. subsection b.1); “the surface area above said onions” in claim 1, the last line of subsection (c), “the depth of the layer of a rock or soil” in claim 6, lines 3-4, etc.

c. Applicant’s 5/25/2005 amendment introduced the limitation however; the phrase “much smaller” in claim 1 is a relative term, which renders the claim indefinite. The term “much” is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Accordingly the metes and bounds of the term “much” are undefined and therefore the claim is indefinite.

d. Claim 8 is vague, indefinite and incomplete in what all is meant by and encompassed by the phrase “ its diameter is approximately meter”. Applicant’s 5/25/2005 amendment deleted the underlined limitation approximately “1.00” meter, making the metes and bounds of the claim undefined.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. **Claims 1-3, 7-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 2,745,346 to Aitchison et al. in view of pages 53-55 of the 1942 Explosives and Demolitions Engineer Field Manual and further in view of U.S. Patent 4,175,490 to Britton et al.**

Aitchison discloses a blasting method comprising using an array (see for example, column 1 lines 15-17, wherein it is understood that multiple blast holes must exist in some sort of pattern or array) of what is known in the art to be chambered or sprung drill holes (which reads on applicants onion-shaped drill holes called "onion drill holes") having a cylindrical upper portion (reads on the bored section of the blast hole) and a close-to-spherical lowermost portion (reads on the lowermost portion of, for example, figure 3) called "onion", which blasting method comprises:

(a) Drilling an array of cylindrical drill holes each having a bottom portion in a site that is to be blasted; (see for example, column 1, lines 19-20)

(b) For each of the cylindrical drill holes, performing the steps of:

b.1) creating what is known in the art as a sprung or chambered cavity which reads on applicant's close-to-spherical cavity, at the bottom portion of the drill hole; (wherein it is understood that

column 2, lines 70+ and column 3, lines 1-5 disclose that charging blast holes which have been sprung or chambered, to increase diameters requires said holes to be sprung or chambered before charging)

b.2) Filling the said onion with a primary explosive charge (see for example, column 3 lines 6-11, wherein it is understood that the sides of the chambered portions constitute the sides of the hole) wherein said initial explosive charge is much smaller than said primary explosive charge;

b.3) Filling a first portion of the drill hole, above said primary explosive charge, with buffer material; (see for example, column 3 lines 11-13)

b.4) Filling a second portion of the drill hole, above said buffer material, with a secondary explosive charge; (see for example, column 3 lines 13-15)

b.5) Filling a third portion of the drill hole with additional buffer material (see for example, column 2, lines 66-69); and

(c) detonating said primary and secondary explosive charges (see for example, column 1, lines 52-56 wherein it is understood that in order to realize the full efficiency and effect of the explosives, said explosives must be detonated), in the locations listed as well as for example claim 12.

However, it does not appear that Aitchison expressly discloses how and in what manner the sprung, chambered and/or expanded sections of the drill hole are created. Pages 53-55 of the 1942 Explosives and Demolitions Engineer Field Manual teach it is notoriously old and well known to use explosives to spring holes for the benefits of enlarging said drill hole to accommodate charges. Therefore at the time of the invention it would have been obvious to one of ordinary skill in the art to spring the drill hole of Aitchison by filling said drill hole with an initial charge and detonating it, thereby creating a close-to-spherical cavity (see for example figure 40 A-D) at the bottom portion of the drill hole and thus imparting an onion shape to the drill hole as taught to be old and advantageous by pages 53-55 of the 1942 Explosives and Demolitions Engineer Field Manual.

Also, Aitchison does not appear to expressly disclose that the primary and secondary explosive charges are "simultaneously" detonated nor that the blasting impact from the detonation is directed evenly to all spatial directions, pulverizing the rock mass and disintegrating rocks at the surface area above said onions, nor that the initial explosive charge is much smaller than said primary explosive charge.

Britton teaches that it is old and advantageous to:

- a. fire deck charges either simultaneously or delayed relative to each other for the benefits of affecting the geometrical behavior of the charges (See for example column 12, lines 49-60)
- b. spring drill holes with "light" charges (reads on applicant's "much smaller" and/or relatively smaller charges) for the benefits of better sideways breakage (see for example column 13, lines 1-20)
- c. use sprung drill holes to allow the charge in the enlarged chamber to act as a concentrated point charge rather than a distributed column charge for the benefits of accentuating the spherical breakage of said enlarged chamber charge (see for example column 12, lines 60+ and column 13 lines 1-20).

Therefore it would have been obvious to one of ordinary skill in the art to:

- a. simultaneously detonate the primary and secondary charges of Aitchison;
- b. use "light" or much smaller or relatively smaller charges to spring the holes of Aitchison; and
- c. use sprung drill holes to direct the blasting impact from the detonation evenly to all spatial directions, pulverizing the rock mass and disintegrating rocks at the surface area above said onions, wherein it is understood that the current claim language "the surface area above said

onions" reads on the actual upper surface area of the sprung chamber itself;

as taught to be old and advantageous by Britton.

With regard to claim 2, obviously the initial charge must be large enough to spring the drill hole thereby imparting an onion shape to said drill hole.

Regarding claims 3, 7,9 and 12, it would have been obvious to one having ordinary skill the art at the time the invention was made to vary the various characteristics in order to achieve an optimum result, In re Aller, 105 USPQ (CCPA 1955) and In re Reese, 129 USPQ 402 (CCPA 1961)

Claim 8 is further disclosed in Britton column 14, lines 42-43.

Applicant's arguments received 5/25/2005 have been fully considered but are unpersuasive. Regarding applicants argument on page 11 that:

- a. a blasting method for open mines and excavations has nothing to do with a method of flowing explosives into blast holes, the examiner respectfully disagrees because in order to blast, explosives must be filled into the drilled holes or "blast holes" and Aitchison states repeatedly that the logical conclusion to filling the blast holes is detonation or the blasting itself. See for example column 1, lines 51-55 and column 3 ,lines 15-19,
- b. Aitchison only discloses any number of extensions situated in any height, the applicant is directed towards figure 2, and
- c. Aitchison only reduces the danger of premature explosion, then the applicant is again directed to column 1, lines 51-55.

10. Claims 1-4, 6-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 2,745,346 to Aitchison et al. in view of pages 53-55 of the 1942 Explosives and Demolitions Engineer Field Manual and further in view of U.S. Patent 4,175,490 to Britton et al. as applied to claims 1-3, 7-9 and 12 and further in view of U.S. Patent 3,710,718 to Grant alone or in the alternative over grant in view of Merriam Webster's Collegiate Dictionary Tenth Edition.

Regarding claim 1, Aitchison in view of pages 53-55 of the 1942 Explosives and Demolitions Engineer Field Manual and further in view of U.S. Patent 4,175,490 to Britton et al. discloses applicant invention as explained in detail above.

With regard to claim 2, Aitchison in view of pages 53-55 of the 1942 Explosives and Demolitions Engineer Field Manual and further in view of U.S. Patent 4,175,490 to Britton et al. discloses a method of imparting the onion shape to the bottom portion of a drill hole is explained above, additionally Grant also discloses a method for creating underground cavities employing explosives wherein imparting the onion shape (known in the art as springing) to the bottom portion of a drill hole is performed by:

(a) Filling the bottom portion of a cylindrical drill hole (11) with initial explosive (12) charge large enough to impart to the bottom of the drill hole the onion shape; and (b) Detonating the initial explosive charge in Figures 1, 2 and column 4 lines 4-23.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to utilize the method of Grant to spring the bottom portion of the drill hole of Aitchison as modified above in order to gain the advantages therefrom (i.e. creating a cavity within the earth without disturbing the surface, rapidly creating cavities within the earth for cratering programs, etc.,) as such results are in no more than the use of conventionally old and well known techniques, methods and procedures available within the art.

With regard to claim 3, Aitchison in view of pages 53-55 of the 1942 Explosives and Demolitions Engineer Field Manual and further in view of U.S. Patent 4,175,490 to Britton et al. discloses applicants invention as explained above, however Aitchison as modified above in view of Grant does not expressly disclose that the bottom portion of the cylindrical drill hole, which is filled with the initial explosive charge, is preferably between 3% and 5% of the total depth of the cylindrical drill hole.

Grant, column 1 lines 35+ and column 2, lines 1-45 discloses formula to determine critical depths of certain explosives. It would have been obvious to one having ordinary skill the art at the time the invention was made to vary the amount of the explosives charged into the borehole in order to achieve an optimum result in creating the desired cavity (onion) size, In re Aller, 105 USPQ (CCPA 1955) and In re Reese, 129 USPQ 402 (CCPA 1961)

Grant further discloses claim 4 in column 4 lines 19-23 wherein it is understood that drill cutting is "initial stemming".

Page 13 of applicant's arguments received 5/25/2005 regarding claim 6 have been considered but are unpersuasive. As explained in the previous office action mailed 1/19/2005, it is the examiners position that Grant discloses claim 6 in, for example, column 3 lines 41-42, column 4, lines 6-9 wherein it is understood that "between 80% - 90% of the "Bench Height" is incorporated within the wording of "approximate depth of the desired cavity" and "about the lower portion of the desired depth of the cavity" (underlining added).

Merriam Webster's Collegiate Dictionary Tenth Edition first definition of "about" includes "reasonably close to" and "almost" and "in the vicinity". It is the examiners position that the range of between 80-90% reads on the phrases "about" and "in the vicinity" and "almost".

Merriam Webster's Collegiate Dictionary Tenth Edition definition of "approximate" includes "to come near" and "to come near to or be close to in position, value, or characteristics". It is the examiners position that the range of between 80-90% reads on the phrases "to be close to in value" and therefore anticipates the claim language.

As stated in section 9 of the office action mailed 1/19/2005, if applicant is still of the opinion that these definitions and explanations do not incorporate the disclosed range, **then it would have been obvious to vary the depth of the holes drilled in order to achieve an optimum result of creating cavities in**

desired locations, In re Aller, 105 USPQ (CCPA 1955) and In re Reese, 129 USPQ 402 (CCPA 1961).

Page 13 of applicant's arguments received 5/25/2005 regarding claim 8 are unpersuasive as applicant has not shown that the references do not teach what the examiner has stated they teach, nor has applicant shown that the examiner's reasoning for an manner of combining the teachings of the references is improper or invalid. Grant discloses in column 5 lines 33-38 that the diameter of the chamber (onion/spring/cavity) generated when explosives are detonated is equal to approximately 4 times the diameter of the charge. Therefore if the diameter of the drill hole and subsequent charge is 8 inches, 8 times 4 equals 32 inches, which is approximately 1 meter. Aitchison discloses that the chamber is filled with primary explosive in column 3, lines 44-49. As taught by Grant, some amount of experimentation is required in order achieve an optimum result, therefore as previously stated it would have been obvious to vary the length, diameter and loading of the "onion" in order to achieve an optimum result, In re Aller, 105 USPQ (CCPA 1955) and In re Reese, 129 USPQ 402 (CCPA 1961).

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 2,745,346 to Aitchison et al. in view of pages 53-55 of the 1942 Explosives and Demolitions Engineer Field Manual and further in view of U.S. Patent 4,175,490 to Britton et al. as applied to claims 1-3, 7-9 and 12 and further in view of U.S. Patent 3,710,718 to Grant alone or in the alternative over grant in view of

Merriam Webster's Collegiate Dictionary Tenth Edition and further in view of U.S. Patent 6,520,089 to Avanci et al.

With regard to claim 7, as explained in section 10 of the office action mailed 1/14/2005, Grant discloses that the diameter of the cylindrical portions are approximately 8 inches in column 5 line 27 and the depth of the drill hole is approximately 13 meters in column 5 line 29. Aitchison discloses in Figure 3 the approximate values of portions disclosed by applicant, however Aitchison as modified above discloses the approximate proportions of the portions in regard to the total overall length, they do not expressly disclose the lengths of the first, second and third portions of the drill hole are approximately 7.8m, 1.95m and 1.95m, respectively.

Avanci discloses in column 4 lines 49-52 that the length of the shot hole is determined by the desired depth of the explosion center and as a rule amounts to between 10m and 30m.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide drill holes with the lengths and proportions of the portions claimed by applicant in order to gain the advantages therefrom (i.e. deck loading, realizing the full efficiency of the explosive, placing explosives in rock strata where it will be most advantageous, etc.,) as such results are in no more than the use of conventionally old and well known techniques, methods and procedures available within the art and it would have been obvious to vary the

characteristics of the holes drilled in order to achieve an optimum result, In re Aller, 105 USPQ (CCPA 1955) and In re Reese, 129 USPQ 402 (CCPA 1961).

Page 14 of applicant's arguments received 5/25/2005 do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. Simply saying that "it is believed that Avanci's method for geological tests would hardly lead a skilled person...to the present invention" does not make it so.

Page 14 of applicant's arguments received 5/25/2005 also fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

12. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 2,745,346 to Aitchison et al. in view of pages 53-55 of the 1942 Explosives and Demolitions Engineer Field Manual and further in view of U.S. Patent 4,175,490 to Britton et al. as applied to claims 1-3, 7-9 and 12 above and further in view of applicants own admission of prior art.

Aitchison as modified above discloses applicants invention as explained above, however they do not expressly disclose that the array of drill holes comprises essentially parallel rows of drill holes; the spacing between each two

adjacent drill holes in the same row being approximately 18 meters, and the spacing between each two adjacent rows being approximately 16 meters.

Applicant discloses prior art in Figure 4A and page 1 wherein it is stated, "Different geometrical arrangements, or arrays, of conventional drill holes are commonly used, which arrangements depend on the geological and topographical characteristics of the site that is to be blasted and on the desired blasting results."

Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to vary the distance and spacing of the drill holes to those claimed by applicant in order to gain the advantages therefrom (i.e. realizing the full efficiency of the explosive, placing explosives in rock strata where it will be most advantageous, minimizing the amount of explosives used, etc.,) as such results are in no more than the use of conventionally old and well known techniques, methods and procedures available within the art, additionally it would also have been obvious to vary the spacing characteristics of the holes drilled in order to achieve an optimum result, In re Aller, 105 USPQ (CCPA 1955) and In re Reese, 129 USPQ 402 (CCPA 1961).

Page 14 of applicant's arguments received 5/25/2005 concerning claim 9 do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

Page 14 of applicant's arguments received 5/25/2005 concerning claim 9 also fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Response to Arguments

13. Page 15 of applicant's arguments received 5/25/2005 has been fully considered but the arguments are not persuasive.

Applicant's arguments have been addressed in the instant application. Further, it is noted that applicant argues "it is not the combination of dimensions that makes the instant method more efficient and cheaper for blasting in open mines and excavations, but the combination of other features" (underlining added), however applicant has failed to disclose exactly what these "other features" are that define over the art or record.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Livingston discloses methods of blasting utilizing the total energy of the blast and controlling the direction and distance of placement of huge volumes of earth.

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Examiner's Note: Examiner has cited particular columns and line numbers in the references as applied to the claims for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant, in preparing the responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel L. Greene Jr. whose telephone number is (571) 272-6876. The examiner can normally be reached on Mon-Fri 8:30am - 5pm.

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18. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can normally be reached, Mon-Fri 6:30am -4:00pm, at telephone number (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

19. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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JACK KEITH
PRIMARY EXAMINER
SOE 3663